

REMARKS

Claims 1, 35-41 and 49-53 are pending in the present application.

Claims 42-48 were withdrawn from consideration but have NOT been canceled.

Claims 35-41 and 50-53 were objected to as being dependent upon a rejected base claims, but were indicated to be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims.

Reconsideration of the claims is respectfully requested.

35 U.S.C. § 103 (Obviousness)

Claims 1 and 49 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,308,415 to *Chou* in view of Japanese Patent Application Publication No. JP 5074958 ("JP '958"). This rejection is respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142; *In re Fritch*, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444

(Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142.

Independent claims 1 and 49 recite that the opening through the multi-layer dielectric structure, which is formed partially by an isotropic etch (with a nitride etch stop layer within the dielectric structure) and partially by an anisotropic etch, is etched through the patterned resist layer without stripping the resist between etch steps. Specifically, a dielectric having

first/bottom and second/top layers, where the second/top layer may be selective etched over the first/bottom layer, is formed, then a resist is formed and patterned over the dielectric. The second/top layer is then selectively etched using a resist selective of the material of the second/top layer over the first/bottom layer. Finally, without stripping the photoresist layer, the first layer is etched to form a contact opening.

Chou teaches forming a dielectric layer of oxide 34, spin-on glass (SOG) 36, and oxide 38 over a conductive line 32. A patterned photoresist layer 40 having an opening 41 is formed over the dielectric layers 34, 36 and 38, then an isotropic etch is performed to etch part way--but not completely--through the upper oxide layer 38, followed by an anisotropic etch substantially removing the photoresist 40 and etching the remainder of the way through the upper oxide layer 38 and through the lower oxide layer 34.

The Office Action proposes incorporating the combination of dielectrics from JP '958 in lieu of the two oxide layers 34 and 38 in *Chou* because silicon nitride can provide etching stopping during the etching of the top or second layer of the dielectric structure. However, this proposed motivation is based entirely on hindsight reconstruction of the claimed invention since *Chou* does not indicate any need for or problem with stopping etching through the upper oxide layer 38. *Chou* implicitly teaches that the etch process may be terminated prior to etching completely through the upper oxide layer 38. Moreover, *Chou* does not teach or suggest any need for an etch stop, since both oxide layers are eventually etched through anyhow.

Additionally, JP '958 relates to etching through a BPSG layer 111 with nitride layer 110 as an etch stop rather than through an oxide layer of the type disclosed in *Chou*. Nothing in either reference suggests that the particular combination of dielectrics in JP '958 could be substituted for the dielectrics in *Chou* and successfully etched as recited in the claims through a photoresist layer.

As previously noted, JP '958 teaches removal of photoresist 112 after wet (isotropic) etching and before dry (anisotropic) etching. See July 2000 translation of JP '958 by Diplomatic Language Services, Inc., page 7, lines 13-16. Instead, JP '958 teaches reliance upon the thickness of the upper (oxide) portion of the dielectric structure during completion of the contact opening by dry etching. Neither reference, taken alone or in combination, teaches or suggests etching through two different materials, one selectively etchable over the other, by etching through a contact opening in a patterned photoresist layer.

Therefore, the rejection of claims 1 and 49 under 35 U.S.C. § 103 has been overcome.